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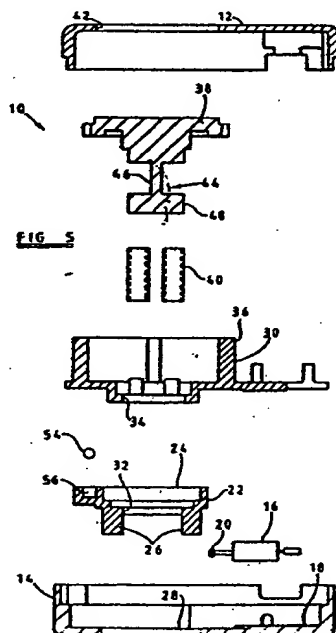
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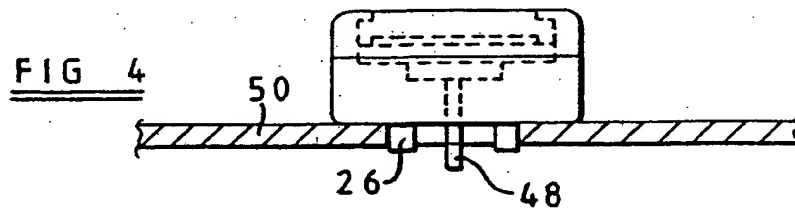
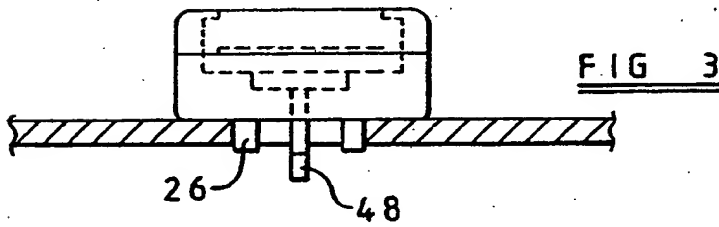
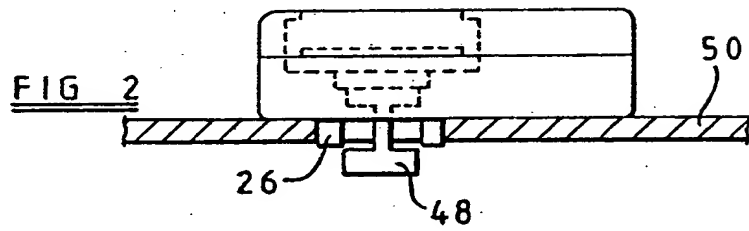
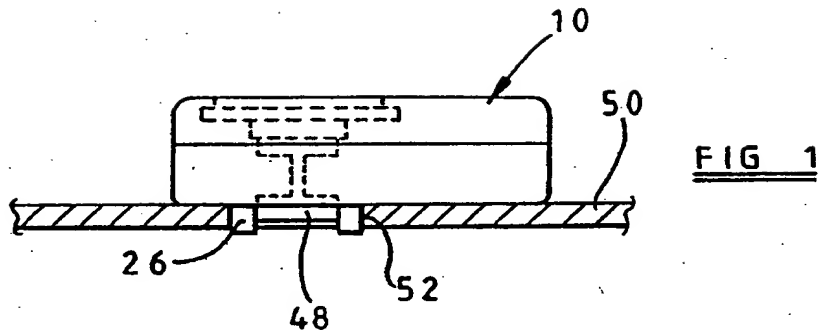
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(54) **Security device**

(57) An anti-theft device 10, for fitment in a ventilation slot of an article such as a video cassette recorder comprises a housing (12, 14) housing a rotatable cam member (24) capable of actuating a microswitch (16) on relative rotation between the cam member (24) and the housing (12, 14). A push button (38), slidably but non-rotatably mounted in the housing (12, 14) has an undercut depending flange (44) which can pass through aligned apertures (32, 28) in the cam member (24) and lower housing half (14) so as to lie between projecting legs (26) of the cam member (24), which are engageable in the slot of the article. Rotation of the housing (12, 14) with the button (38) depressed simultaneously actuates the microswitch (16) and turns the undercut flange (44) across the slot so as to retain the projecting legs (26) in engagement with the slot. Any unauthorised attempt to remove the device (10) causes relative movement between the cam member (24) and microswitch (16) thereby triggering an alarm.



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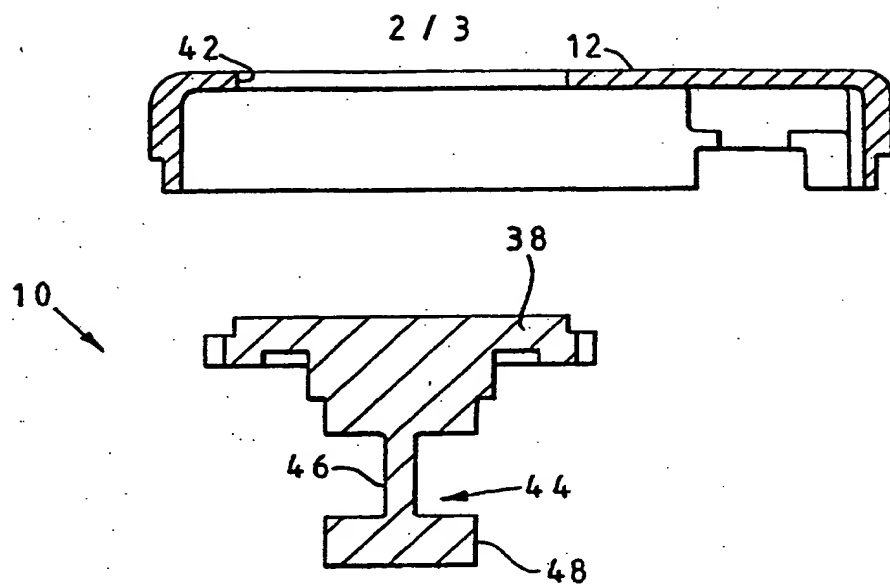
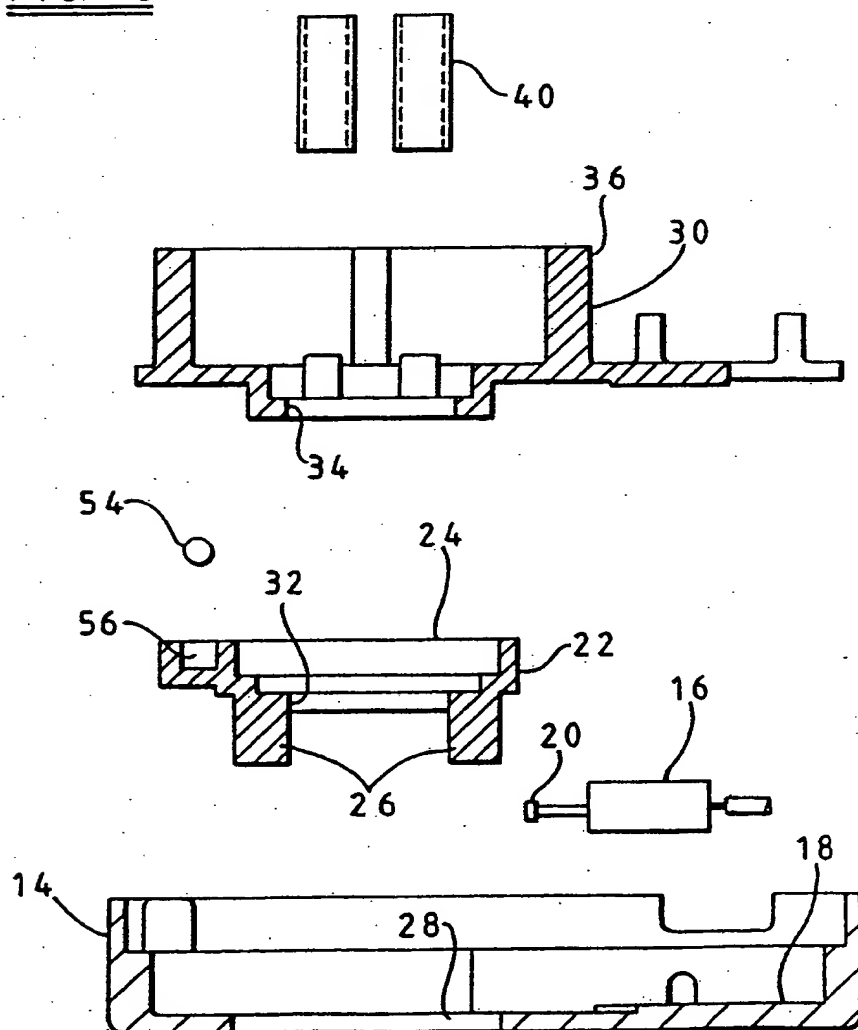


FIG 5



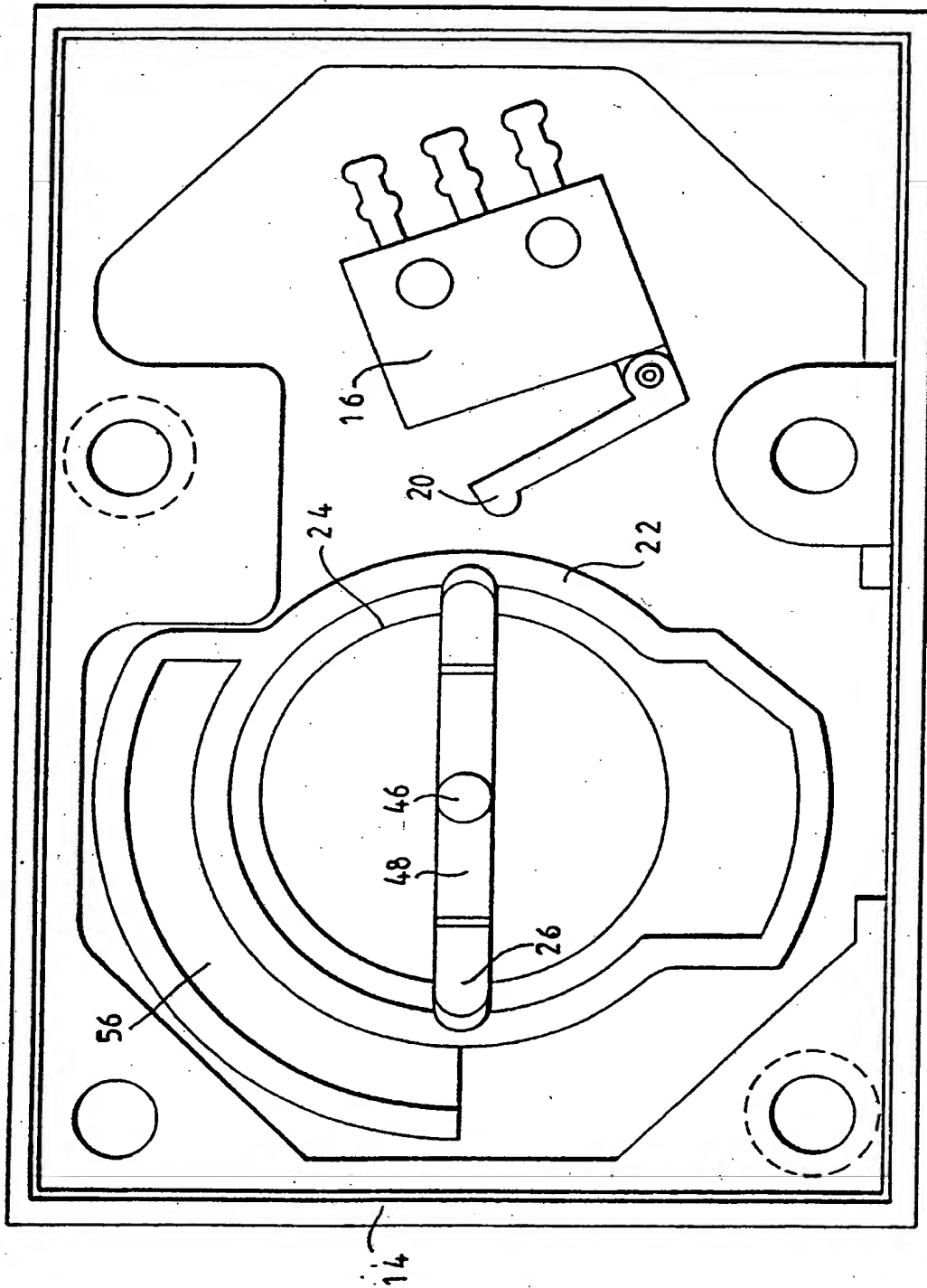


FIG 6

Title: Security device

The present invention relates to a security device.

One of the problems of having electrical goods such as television sets and video cassette recorders (VCR's) on open display in shops is the difficulty of preventing theft of these goods. Various types of anti-theft devices have been developed. One form of anti-theft device houses a microswitch and is coupled to an alarm circuit through a cable. The device has an adhesive pad on one outer surface, by means of which it is secured to, for example, a television set casing. An actuating lever of the microswitch projects beyond the surface so that when the microswitch is attached to the television set casing the actuating lever is depressed to close the microswitch and complete the alarm circuit. If the device is removed or the connecting cable broken then the alarm is sounded.

In an alternative form the adhesive pad is replaced by a magnet or magnetised surface to enable the device to be attached to metal casings. However, it is possible to slide a thin sheet of metal or other material between the device surface and the casing to enable removal of the device without opening the microswitch and actuation of the alarm.

The present invention seeks to provide an improved anti-theft device.

Accordingly, the present invention provides an anti-theft device for attachment to an article whose casing has slots such as ventilation slots, comprising a housing; switching means retained fully within said housing; actuator means in said housing for actuating said switching means, said

actuator means being movable relative to said housing and said switching means between first and second positions wherein, in said first position said switching means is in a first switched state and in said second position said switching means is in a second switched state, and said actuator means having projector means projecting beyond said housing for engagement in a slot in said article casing; and retaining means movable with said housing relative to said actuating means for retaining said projecting means in engagement with said slot when said actuating means is in one of said first and second positions relative to said housing.

The switching means may be microswitch means.

The actuator means may be rotatable relative to said housing and said switching means.

The actuator means may be rotationally biased so as normally to adopt said first position relative to the housing.

The actuator means may comprise a cam means mounted in said housing and adapted to actuate said switching means on rotation of the cam means relative to the housing.

The projection means may comprise a pair of spaced depending legs.

Said retaining means may comprise a resiliently biased manually operable member such as a button, slidable but non-rotatable in the housing, and including an undercut member adapted to be inserted through said cam means, whereby said relative rotation between the actuator means and the housing moves said undercut member into a retaining position relative to said slot.

The present invention is further described hereinafter, by way of example, with reference to the accompanying drawings, in which:

Figures 1 to 4 are side elevations of a preferred form of security device according to the present invention, showing the device in various stages of attachment to an article;

Figure 5 is a sectional side elevation of the device in disassembled form; and

Figure 6 is a plan view of the partially assembled device.

The security device 10 illustrated in the drawings has upper and lower housing halves 12, 14. A microswitch 16 is located on a bottom wall 18 of the lower housing half and has a trip arm 20 which cooperates with a cam surface 22 of a cam 24. The cam 24 is also located on the base wall 18 of the lower housing half and has two spaced depending legs 26 which project through a generally circular opening 28 in the base wall 18 when the cam 24 is in position. The engagement of the cam 24 with the lower housing half 14 is such that the cam 24 and the housing are rotatable relative to one another about an axis perpendicular to the plane of the base wall 18 and passing through the centre of the opening 28.

The relative rotation of the cam 24 and the housing is preferably limited to 90°.

In the relative positions of the cam 24 and the housing shown in Figure 5 and Figure 6 the cam 24 is in an inactive position which forms one extreme rotational position. In this position the microswitch 16 is open and

the device is "unarmed". When the housing is rotated relative to the cam 24, an active position is reached in which the cam surface 22 closes the microswitch and the device is "armed". Return rotation of the cam 24 re-opens the microswitch 16 and operates an alarm (not shown).

The cam 24 and microswitch 16 are retained in position by a retaining plate 30. Both the cam 24 and the retaining plate 30 have respective apertures 32, 34 aligned with the opening 28 in the lower housing half.

The retaining plate 30 also carries a generally cylindrical upstanding wall 36 on its surface remote from the cam 24. The wall 36 receives a manually operable button member 38 which is slidable axially of the wall 36. The button member 38 is biased axially of the wall 36 away from the cam 24 by suitable resilient means such as coil springs 40 acting between the button member 38 and the retaining plate 30.

The button member 38 is accessed via an aperture 42 in the upper surface of the upper housing half 12.

The button member 38 and the retaining plate 30 are profiled in such a way as to prevent relative rotation of the two and also to limit the movement of the button member 38 axially of the wall 36.

The button member 38 also has a depending undercut flange 44 in the shape of an inverted "T" having a first limb 46 extending generally axially of the button member 38 and a second laterally extending limb 48. These are dimensioned generally such that when the button member 38 is biased into its uppermost position the laterally extending limb 48 lies between the two legs 26 of the cam 24, the limb 48 also being aligned with the legs 26.

Figures 1 to 4 show the method of attachment of the device to a casing 50 of an article such as a video cassette recorder (VCR). Initially, the device 10 is positioned on the outer surface of the casing 50 with the two legs 26 of the cam 24 located in an elongate ventilation slot 52 of the casing. The legs 26 are spaced apart by an amount greater than the width of the ventilation slot so that when positioned in the ventilation slot they can only lie along the longitudinal axis of the slot.

The button member 38 is then depressed to lower the laterally extending limb 48 beyond the lower surface of the housing 14 and through the slot 52 of the casing 50 (Figure 2). While maintaining the button depressed the housing of the device 10 comprising both upper and lower halves 12 and 14, is then rotated about the axis of the button member through 90°. Since the microswitch 16, retaining plate 30 and button member 38 are rotationally secured relative to the housing, these are also rotated with the housing about the axis of the button member 38. However, the cam 24 is prevented from rotating with the housing by engagement of its legs 26 in the ventilation slot 52. As a result of this, the microswitch 16 is actuated by the action of the cam surface 22 on the microswitch trip arm 20.

On release of the button member 38, the latter is urged upwardly by the coil springs 40 towards its rest position. However, because the laterally extending limb 48 of the button member has turned through 90° (Figure 3) it cannot pass through the ventilation slot and therefore serves to retain the device 10 in position over the ventilation slot (Figure 4). In use, the microswitch 16 is connected in an alarm circuit. Any unauthorised attempt to remove the device by rotating it from the position shown in Figure 4,

with or without depressing the button member 38, towards the position shown in Figures 1 and 2 will result in the microswitch 16 being opened by rotation of the cam 24 relative to the microswitch, thus actuating the alarm.

The cam 24 also carries a resilient member such as a coil spring 54 in a groove or recess 56. One end of the coil spring 54 abuts against a surface of the cam 24 whilst the other end abuts against a surface of the retaining plate 30 or the housing of the device, the surfaces being relatively inclined and the arrangement being such that the coil spring 54 is compressed when the housing is rotated from the position shown in Figures 1 and 2 to the position shown in Figures 3 and 4. Therefore, should anyone attempt to remove the device forcibly by pulling it away from the casing 50 and snapping off the undercut depending flange 44, when the legs 26 of the cam 24 are released from the ventilation slot 52 the spring 54 rotates the cam 24 into its original, rest position, thus opening the microswitch 16 and activating the alarm.

Authorised removal of the device can take place by firstly deactivating the alarm and then rotating the housing with the button 38 depressed to rotate the undercut depending flange 44 from the retaining position of Figure 4.

Claims

1. An anti-theft device for attachment to an article whose casing has slots such as ventilation slots, comprising a housing; switching means retained fully within said housing; actuator means in said housing for actuating said switching means, said actuator means being movable relative to said housing and said switching means between first and second positions wherein, in said first position said switching means is in a first switched state and in said second position said switching means is in a second switched state, and said actuator means having projector means projecting beyond said housing for engagement in a slot in said article casing; and retaining means movable with said housing relative to said actuating means for retaining said projecting means in engagement with said slot when said actuating means is in one of said first and second positions relative to said housing.
2. An anti-theft device according to claim 1 wherein the switching means comprise microswitch means.
3. An anti-theft device according to claim 1 or claim 2 wherein the actuator means is rotatable relative to said housing and said switching means.
4. An anti-theft device according to claim 3 wherein said actuator means is rotationally biased so as normally to adopt said first position relative to the housing.
5. An anti-theft device according to claim 3 or claim 4 wherein actuator means comprises a cam means mounted in said housing and adapted to actuate said switching means on rotation of the cam means relative to the housing.
6. An anti-theft device according to claim 5 wherein said

projection means comprises a pair of spaced depending legs.

7. An anti-theft device according to claim 6 wherein said retaining means comprises a resiliently biased manually operable member such as a button, slidable but non-rotatable in the housing, and including an undercut member adapted to be inserted through said cam means, whereby said relative rotation between the actuator means and the housing moves said undercut member into a retaining position relative to said slot.

8. An anti-theft device substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.